Gwynedd Mercy
University

Program-Level Assessment Plan (Academic)
Program/Division: CIS
DATE: 08/11/2018
Evaluators: Cindy Casey

2018 University Learning Outcomes: **ULO1** Knowledge of Human Cultures and the Physical and Natural World; ULO2 Intellectual and Practical Skills; ULO3 Personal and Social Responsibility, **ULO4** Integrative and Applied Learning; ULO5 Immersed in the Critical Concerns of the Sisters of Mercy of the Americas

ASSESSMENT RESEARCH QUESTION: Is the program currently providing students with the practical skills employers are looking for upon graduation?
ASSESSMENT HYPOTHESIS: Upon graduation, CIS students are not obtaining employment in their chosen concentrations.

University Learning Outcomes	Program Learning Outcomes	Key Courses that ensure that this objective is met.	Evidence	Assessment Practice	Assessment RESULTS	Benchmark	MET/ NOTMET/ IN PROCESS
ULO2 Intellectual and Practical Skills	PLO 1: Possess effective communication skills in technology in a variety of formats	CIS340, Computer Forensics	Direct Evidence: Written Technical Reports	Written Reports: Modified version of the MASUS (Measuring the Academic Skills of University Students)	5 out of 6 students will score 3 or above on the MASUS scale	83% will meet or exceed standard	Not Met
		CIS101, Intro to Computing	Direct Evidence: Assignments, Projects, Presentations	Oral Presentations: Rubric applied to random assignments	15 out of 20 students will satisfy rubric criteria	75% meet or exceed standard	Met
ULO2 Intellectual and Practical Skills	PLO 2: Work effectively in a team environment to accomplish a common goal	CIS4000, Capstone	Direct Evidence: Development, completion, and presentation phases of capstone project	Oral Presentations: Rubric applied to each participant in the team	7 out of 9 students will satisfy rubric criteria	77% will meet or exceed standard	Met
ULO3	PLO 3: Understand the professional,	CIS240, Cybercrime	Direct Evidence: Projects	Oral Presentations and written research papers:	7 out of 10 students will show	70% will meet or exceed standard	Met

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Personal and Social Responsibility **ULO5** Immersed in the Critical Concerns of the Sisters of Mercy	ethical, security, and social impact that computers and technology have in global society			Rubric applied to Mid-term and Final Projects	significant improvement in rubric score by term end		
ULO 4 Integrative and Applied Learning	**PLO 4:** Demonstrate problem-solving abilities for analyzing a technical problem through finding and implementing a solution.	CIS321, Computer Organization	Direct Evidence: Assignments, Final Project, Quizzes	Rubric applied to random sample	7 out of 10 students will satisfy rubric criteria	70% will meet or exceed standard	Met
ULO 2 Intellectual and Practical Skills	**PLO 5:** Demonstrate innovative approaches to addressing technological issues.	CIS230, Intro to Networking	Assignments	Rubric	10 out of 15 students satisfy rubric criteria	75% will meet or exceed standard	In Process

Selected KEY PERFORMANCE INDICATORS:

CIS Concentration	2017 Enrollment	2017 Credit Hours Generated	2017 Attrition Rate	Degrees Awarded	Exit or Graduate Survey Results	Graduates: Employment/Graduate School/Certificate or Professional License Rates
CIS: Business	4	83	0%	2	NA	100% Employed *No Certifications*
CIS: Computer Forensics	13	300	7%	3	**NA**	66.5% Employed *(none are employed in concentration of study)* *No Certifications*
CIS: Web Multi-Media Design	4	121	25%	2	**NA**	100% Employed (50% in concentration of study) 50% Graduate School *No Certifications*
CIS: Dual Concentration (Computer Forensics/Multimedia)	1	30	9%	1	**NA**	Internship *(not in concertations of study)* *No Certifications*

Executive Summary of FINDINGS/RESULTS:

There are several curriculum challenges within the program. With the exception of the programming courses (CIS104 Programming 1, CIS204 Programming 2, CIS301, Algorithms and Data Structures, and CIS304, Event-Driven Programming) and CIS 420, Mobile Applications Development, a majority of the courses being taught either provide no hands-on experience, insufficient theory, or are simply outdated. Additionally, two of the concentrations, Web Design and Multimedia and Computer Forensics, are not preparing our students for employment in their desired fields of study.

Computer Forensics: At present, we only offer one computer forensics course. When programs in computer forensics initially emerged, taking a series of criminal justice courses and one or two computer forensic classes was sufficient. However, a decade later, one course is not enough. Today employers are looking for graduates who are familiar with multiple devices and methodologies, not just dead-box examiners. It is recommended that we add a course in network forensics (monitoring and analysis of computer network traffic, email investigations, intrusion detection, and working with volatile data) and afford students in the computer forensics concentration the opportunity to sit for their FTK certifications. Installing the FTK database and software on CIS laptops also provides students with experience setting up forensic workstations/laboratories.

Web Design and Multimedia: The web design and multimedia concentration is not preparing students for internships and careers as web developers. This could be addressed by introducing the LAMP stack (Linux, Apache, MySQL, and PHP) in CIS424 (Web Design 2) and CIS 325 (Database Admin & Security). Additionally, a course in Linux could replace the existing CIS elective in the major requirements.

Another concern is the writing skills of the students in the program. When written reports or papers were assigned in a class of 12 students, only one student utilized proper citations. Moreover, only 4 of the 12 written reports submitted were clearly written. This problem is not isolated to one class, but has been observed throughout the program. Using a modified version of the MASUS (Measuring the Academic Skills of University Students), typically administered to incoming freshman, when 6 CIS students were asked to write a written report in CIS 240 (Computer Forensics), 3 students scored 2, and 3 students scored 1, on a scale of 1-4[1].

In order ensure that networking fundamentals and core knowledge is being taught across all concentrations, the program could align core courses to industry certifications such as the CompTIA Net+ or Cisco CCNA. By adopting textbooks or hands-on labs which cover these exams in-depth, instructors will be less inclined to overlook core concepts. Additionally, courses will not become antiquated as these textbooks are regularly updated and aligned with industry trends and new technologies. At present, instructors are permitted to adopt whatever textbook they want to teach from. This practice is problematical for numerous reasons such as a lack of consistency, tendency to use outdated materials, and most importantly, difficulty in measuring student success. Student assessments should be aligned with the course objectives. In order to measure if these objectives have been attained, it is critical that there is consistency in each section of the course. Another option would be to integrate fundamental concepts into multiple courses throughout the program. For instance, while teaching CIS114 (Web 1) this past semester, instead of simply demonstrating how to upload files to a file server or that a web page is retrieved from the world wide web, students were taught that files are uploaded using the file transfer protocol (FTP) on ports 20 and 21 (21 for command and 20 for data), and that hypertext transfer protocol (HTTP) is the underlying protocol used by the www on port 80.

NEXT STEPS:

To address these findings, the CIS program will take the following action steps:
1. Continually update and monitor curriculum to align with industry trends and emerging technologies.
2. Introduce simulated labs, boot-camps, and access to certification training software.
3. Integrate fundamental industry concepts and practices into multiple courses throughout the program.
4. Improve writing skills by incorporating a written assignment in each course (exceptions: programming classes, mobile applications, and web 1 and web 2).
5. Students will learn and be encouraged to use APA and IEEE formats.
6. Improve forensic skills and knowledge in the computer forensics concentration by offering students Forensic Toolkit (FTK) training and certifications.
7. Introduce the LAMP stack (Linux, Apache, MySQL, and PHP) in CIS424 (Web Design 2) and CIS 325 (Database Admin & Security).
8. Develop a Linux course to replace existing CIS elective.
9. Continual monitoring of student proficiencies and knowledge throughout the program.

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[1] MASUS Rating Key: 4 = excellent/very accurate, 3 = good/minor problems, 2 = fair/some problems, 1 = poor/inaccuracies